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GOLF CLUB HANDLE GRIP

BACKGROUND OF THE INVENTION

The present invention relates to a polyurethane-felt golf club handle grip which is tacky and shock absorbing, but has the smooth exterior surface of a conventional rubber grip.

5 Applicant has previously developed resilient grips which are both tacky and also successfully reduce shock to the muscle and arm joints of the users of golf clubs, tennis racquets, racquet ball racquets, baseball bats and other impact imparting devices. See, for example, U.S. Patent Number 5,797,813 granted to applicant August 25, 1998. Such earlier golf club grips utilize a polyurethane layer bonded to a felt layer to define a strip which is spirally wrapped
10 around an underlisting sleeve which is adhered to the handle of a golf club or to a bare golf club handle. The sides of the felt layer taper from the side edges of the strip and the polyurethane layer is formed with recessed reinforcement side edges which overlap to form a water retarding joint between the side edges of the strip when the strip is spirally wrapped around the underlisting sleeve or the bare golf club handle.

15 **SUMMARY OF THE INVENTION**

While grips such as disclosed in my Patent No. 5,797,813 afford superior results as compared to conventional rubber golf club grips, some golfers prefer a grip having the smooth exterior surface of a conventional rubber golf club grip, rather than the interrupted exterior

surface resulting from the gaps between the overlapped recessed reinforcement edges of grips such as disclosed in my Patent No. 5,797,813.

A preferred form of shock resistant handle grip embodying the present invention includes a strip of bonded-together polyurethane and felt layers which is spirally wrapped about either a resilient underlisting sleeve or the bare handle of a golf club or other impact imparting device, the polyurethane layer being outside the felt layer. The polyurethane layer of the first side edge of the strip is heat compressed to provide a recessed reinforcement edge surface. The polyurethane layer of the second side edge area of the strip is formed with a compressed heat densified area. The felt layer of the first side edge is skived to slant upwardly and outwardly from the underside of the strip. Both the polyurethane and felt layers of the second side edge are skived to slant upwardly and outwardly from the underside of the strip. A conventional double-sided adhesive tape is attached to the underside of the felt layer. To apply the polyurethane-felt strip to the underlisting sleeve of a golf club handle or alternatively to the bare handle of a golf club or the like, the protective strip of the adhesive tape is removed and the strip is spirally wrapped about the underlisting sleeve or bare handle with the second side edge of the strip overlapping the first side edge of the strip along the length of the strip. The resulting juncture between the second and first side edges provides a tight seam between the overlapped side edges along the length of the grip resulting in a smooth exterior surface of the grip which is engaged by a golfer's hands. Such smooth exterior surface resembles the smooth exterior surface of a

conventional rubber golf club grip preferred by some golfers. However, the grip of my present invention provides the advantages of polyester-felt grips of the type shown in my Patent No. 5,797,813. The grip of my present invention can also provide a long service life, may be manufactured at a low cost, and can be readily installed by a user.

5 These and other features and advantages of the present invention will become apparent from the following detailed description of a preferred embodiment which, taken in conjunction with the accompanying drawings, illustrates by way of example the principles of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

10 Fig. 1 is a top plan view of a strip blank cut from a panel of bonded-together polyurethane and felt layers in accordance with the present invention;

 Fig. 2 is a side elevational view showing how the upper surface of such strip blank is provided with a heat embedded friction-enhancing pattern;

 Fig. 3 is a top plan view of the strip blank after the friction-enhancing pattern has been formed on the upper surface thereof;

15 Fig. 4 is a side elevational view taken in enlarged scale along line 4-4 of Fig. 3;

Fig. 5 is a cross-sectional view showing a heat compressed radially inwardly extending reinforcement edge surface being formed on the first side edge of the strip blank by a heated platen;

5 Fig. 6 is a cross-sectional view similar to Fig. 5, showing the heat compressed inwardly extending reinforcement first side edge being formed by a heated roller;

Fig. 7 is a cross-sectional view showing the formation of a compressed heat densified area on the second side edge of the strip blank by means of a heated platen;

Fig. 8 is a cross-sectional view similar to Fig. 7 showing a heated roller in place of the heated platen of Fig. 7;

10 Fig. 9 is a cross-sectional view showing the first and second side edges of the strip blank being skived;

Fig. 10 is a vertical sectional view showing the strip blank after the skiving operation;

15 Fig. 11 is a broken top plan view of the strip blank after the tapered leading and trailing edges thereof have been cut-off the ends of the blank;

Fig. 12 is top plan view showing the protective strip of the double-faced adhesive tape being peeled-off the adhesive applied to the surface of the felt layer;

Fig. 13 is a vertical sectional view taken in enlarged scale along line 13-13 of Fig. 12;

Fig. 14 is a perspective view of a resilient underlisting sleeve about which the strip of

5 Fig. 11 is spirally wrapped;

Fig. 15 is a vertical sectional view taken along line 15-15 of Fig. 14;

Fig. 16 is a broken enlarged sectional view of the upper portion of the underlisting sleeve;

Fig. 17 is a horizontal sectional view taken along line 17-17 of Fig. 16;

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Figs. 18-20 and 22-24 are side views showing the strip being spirally wrapped around and secured to the underlisting sleeve;

Fig. 21 is a sectional view taken in enlarged scale along line 21-21 of Fig. 20;

Fig. 25 is a vertical sectional view taken in enlarged scale along line 25-25 of Fig. 20; and

Fig. 26 is a perspective view of a golf club provided with a golf club handle grip of the present invention.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

Referring to the drawings, a preferred golf club handle grip G embodying the present invention utilizes an elongated resilient strip S which is spirally wrapped about an underlisting sleeve telescopically overlapping and adhered to the handle of a golf club C or directly to a bare golf club handle (Fig. 26). Strip S is formed from a strip blank SB which includes a felt layer generally designated 30 having an inwardly-facing surface 32 which is provided with an adhesive 34. The felt layer may be made of a material known to those in the art as wool, nylon, polyester or the like. The upper surface of the felt layer 30 is bonded to the lower surface of a polyurethane layer 36 to define the unitary strip blank SB. The polyurethane layer 36 may be formed in a conventional manner, such as described in my Patent No. 5,797,813 and is preferably coagulated so as to provide a cushioned grasp of a golfer's hands on a golf club while enhancing the player's grip on the golf club by providing increased tackiness between the player's hand and the grip as compared to a convention rubber golf club grip. The felt layer 30 provides strength to the polyurethane layer 36 and serves as a means for attaching the bonded-together polyurethane and felt strip to a golf club handle underlisting or to a bare handle. The adhesive 34 of the felt layer may be carried by a conventional double-faced tape T, wherein the adhesive is originally covered with a protective paper quick-release cover 38. If desired, the outer (upper) surface of the polyurethane layer of the strip S may be formed with a friction-enhancing pattern 40.

Alternatively, other patterns can be formed in the polyurethane layer, such as vertically extending perforations.

More particularly, Fig. 1 is a broken top plan view of a polyurethane-felt strip blank SB which is configured into the strip S. In Fig. 2, a heated die D is shown being urged against the upper surface of the strip blank to form the friction enhancing pattern 40 shown in Fig. 3. Fig. 4 is a vertical cross-sectional view taken in enlarged scale along line 4-4 of Fig. 3 of the strip blank SB. Fig. 5 is a vertical sectional view showing a conventional heated platen 42 being urged against the upper surface 43 of the first side edge 44 of polyurethane layer 36 to form an inwardly extending recessed reinforcement surface 46 along such first edge of the strip blank. The lower surface of the strip blank abuts a base plate 42a. Fig. 6 is a view similar to Fig. 5 wherein the recessed reinforcement surface 46 is formed by means of a pair of conventional heated rollers 47.

In Fig. 7 the strip blank of Fig. 6 has been inverted so the felt layer 30 is disposed above the polyurethane layer 36. The heated platen 42 of Fig. 5 is shown applying heat through the felt layer of the second side edge 48 of the strip blank SB to the polyurethane layer 36 to form a compressed densified area 49 on such second side edge, while the strip blank is supported by base plate 43a having a smooth upper surface. The application of heat to the polyurethane layer in this fashion serves to densify and therefor compress and strengthen the second side edge of the polyurethane layer without creating a marking on the outer (lower) surface of the polyurethane layer 36. In Fig. 8 heat is shown being applied to the second side edge 48 of the polyurethane layer 36 by means of heated rollers 50. It should be understood that with respect to both Figs. 7 and 8 the

temperature applied to the second side edge 48 of the polyurethane layer, to form the compressed densified area 49, will be higher than the temperature applied to the first side edge 44 of the polyurethane layer in Figs. 5 and 6 in forming the reinforcement side edge surface 46. By way of example, the temperature employed in the operation of Figs. 7 and 8 would be approximately 250-260 degrees centigrade, while the temperature being applied in the operation of Figs. 6 or 7 would be about 200 degrees centigrade, since the heat must be transferred to the polyurethane layer through the felt layer to form the compressed densified area 49.

Referring now to Fig. 9, after the first and second side edges of the strip blank SB have been heat formed with the recessed reinforcement surface 46 and the compressed densified area 49, the strip blank is inverted and both the first and second side edges are skived to form surfaces which slant upwardly and outwardly with respect to the inner surface (underside) of the felt layer 30. Such skiving may be obtained by means of a pair of conventional power-driven rotary knives 52 and 53. The knives are of like construction and are carried at the upper end of slanted rotatable shafts 54 and 55. During the skiving operation the strip blank SB is compressed between upper and lower powered rollers 56 and 57, respectively. The general appearance of the strip blank after such skiving is shown in Fig. 10. First side edge 44 has a slanted surface 58, while second side edge 48 has a slanted side edge 59. These slanted side edges may be of equal or differing widths. After the side edges of the strip blank have been skived the double-faced tape T may be applied to the underside of the felt layer 30 in a conventional manner.

Referring now to Fig. 11, the ends of the strip blank SB are then cut-off to define leading edge 60 and trailing edge 62. The resulting strips are then ready to be spirally wrapped around a

resilient underlisting sleeve U shown in Figs. 14-17. Underlisting sleeve U is formed of a resilient material such as a natural or synthetic rubber or plastic. Sleeve U includes an integral cap 64 at its upper end, while the lower end of the sleeve is formed with an integral nipple 65. The upper portion of the underlisting sleeve is formed with a groove 66 while the underside of cap 64 is formed with a circumferentially extending upwardly extending slot 68. The groove 64 and slot 68 receive the upper or butt end of the resilient strip S in a manner to be described hereinafter. The lower nipple 65 is also formed with an upwardly extending slot 70 .

Referring now to Figs. 12, 18-21, to secure the upper or leading edge 60 of resilient strip S within the circumferential slot 68 of nipple cap 64, the protective cover 38 of tape T is peeled-off adhesive 34. The upper edge of the strip is then manually urged into the confines of the cap slot 68 as shown in Fig. 19. Below the cap 64 the pointed end 69 of leading edge 60 is disposed within the groove 66. The remainder of the strip S is then spirally wrapped downwardly along the outer surface of the underlisting sleeve U. When the strip has been spirally wound to a position wherein its lower or trailing edge 62 is disposed in horizontal alignment with the lower portion of nipple groove 70 the pointed lower end portion 72 of the trailing edge is manually urged into the confines of the groove by temporarily expanding the peripheral lip 73 formed outwardly of the groove so as to admit the lower edge of the strip into the groove. When the lip 73 returns to its original position, the lip will securely retain the lower end of the strip S to the upper portion of the nipple as shown particularly in Figs. 22-24. With this arrangement, the

upper end of strip S is restrained against unraveling by being locked within cap slot 68 while the lower end of such strip is restrained against unraveling by nipple lip 73.

The spiral wrapping of the strip about the underlisting U, may take place when the underlisting sleeve U is positioned upon a mandrel M in a conventional manner. After the strip
5 has been secured upon the underlisting U, the sleeve and strip combination may be removed from the mandrel and be utilized as a grip to be slipped onto the handle portion of a golf club shaft.

Referring now to Fig. 25, in wrapping the strip S around the underlisting sleeve U, the compressed densified area 49 of the second edge 48 of the strip S overlaps the recessed
reinforcing surface 46 of the first side edge of the strip. The adhesive 34 is seen to extend for the
10 entire distance of the overlapped side edges, since the upper end of the slanted second side edge 48 tapers radially outwardly and upwardly to a pointed feather edge where the compressed densified area 49 of the side edge 48 abuts the innermost part of the recessed reinforcement surface 46. There is thus provided a thin seam 75 at this juncture. Preferably, the width of this
seam will not exceed 0.5mm, but is preferably less than 0.5mm. This arrangement provides a
15 smooth exterior surface of the grip G which resembles the feel of the smooth exterior surface of a conventional rubber golf club grip preferred by some golfers. However, the grip of my present invention provides the tackiness and shock absorbing qualities of polyester-felt grips of the type shown in my Patent No. 5,797,813. These qualities are not provided by a conventional rubber golf grip.

20 It should be understood that various modifications and changes may be made with respect to the above description without departing from the scope of the present invention.